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ARTICLES

Page

Principles of Bracing in the Rehabilitation of the Paraplegic.—By Arthur S. Abramson, M.D. 3

Instructions in Physical Orientation and Foot Travel.—Brooklyn Industrial Home for the Blind 7

Outdoor Gymnasium for Corrective Therapy at Togus Veterans Administration Neuropsychiatric Hospital.—By Leon R. Burnham, M.D., and Charles Bader 13

Activity and Aphasia Therapy—By L. D. Yamshon, M.D.; George Devins; J. M. Nielson, M.D.; and Donald M. Schultz, Ph.D. 18

The Use of Pulley Weights in the Treatment of the Multiple Sclerosis Patient by Stanley Wertz 22

Goal-Directed Activities in the Treatment of Schizophrenic Patient — By Richard L. Jenkins, M.D. 24

DEPARTMENTS

Page

EDITORIAL 26

NEWS AND COMMENTS 29

BOOK REVIEWS 30

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Principles of Bracing In The Rehabilitation Of The Paraplegic

By

ARTHUR S. ABRAMSON. M. D.*

Within recent years it has been commonly accepted that crutch-and-brace ambulation forms an integral part of the rehabilitation of the paraplegic. It is necessary to develop a proper orientation to the subject as a whole and specifically to discuss the methods of attainment of maximum function with minimal bracing.

Four points of view have developed concerning the degree to which this ambulation can be carried out. There are those who believe that the paraplegic must develop the use of crutches and braces to the point of total ambulation. Some think that the use of the wheelchair as the sole means of locomotion is sufficient. A third group feels that a combination of both of these methods is best. The fourth group, which fortunately has not put its concepts into practice, has suggested that paraplegics would be better off and more adept at handling themselves if both legs were amputated. It would be well, at this point, to analyze all these opinions and to understand the advantages and disadvantages of each.

The last group can be quickly disposed of. It has been the experience of almost all who have worked with paraplegics that in most cases the retention of the lower extremities does not form an insurmountable barrier to the ability of the paraplegic to become self-sufficient. Furthermore, those paraplegics that we have seen, in whom the lower extremities had to be amputated for other reasons, did poorly in comparison to those with similar neurologic lesions who retained their lower extremities.

Ambulation by means of crutches and braces as the sole method of getting about, has proven feasible in a limited number of cases. Generally, these people are slim, athletic and have either conus or cauda equina lesions. This lower motor neuron type of lesion spares the abdominal and back muscles and permits the legs to remain flaccid following spinal shock. There is also a large loss of weight, due to the almost total muscle atrophy occurring in the lower extremities. However, in heavy, spastic individuals who have high lesions there is a limit to the development of muscle power in the upper normal part of the body, and the lower extremities remain heavy and bulky. Crutch-and-brace walking as a total means of ambulation in these cases becomes a goal almost impossible to attain with any great degree of efficiency, and is usually accompanied by frustration.

The sole use of the wheelchair as a form of locomotion has definite drawbacks. The paraplegic will require a considerable amount of aid to mount stairs, curbs or other obstacles. There are small areas which are restricted for the paraplegic in a wheelchair, the chief one being the bathroom. The constant use of the wheelchair would favor the formation of flexion contractures. And the complete loss of weight-bearing would mean the loss of the most important stimulus for the protein bone matrix. As a result calcium would pour out from the bones, and osteoporosis, urinary calculi, soft-tissue ossifications, and even pathological fractures might result (1). Unrelieved sitting may also produce ischial decubiti.

A combination of crutch-and-brace walking, and wheelchair locomotion is acceptable and practical in a majority of cases because of the following facts:

1. It enables the individual to get into restricted places and to mount stairs and curbs by means of crutches and braces.
2. Ambulation done for several hours a day supplies an excellent form of maximal functional exercise to the normally innervated parts of the body and applies pressure to the lower extremities with concomitant beneficial results on the metabolic processes.
3. Ambulation undoubtedly has a beneficial effect upon spasticity, if it is done religiously.
4. Most vocations require a considerable amount of rapid moving about, and the use of the wheelchair is a distinct time-saver. It also frees the hands to accomplish work.
5. The rapidity and distance which the individual can travel via the wheelchair gives a greater sense of freedom.

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*Sponsored by the Veterans Administration and published with the approval of the chief Medical Director. The statements and conclusions published by the author is a result of his own study and does not necessarily reflect the opinion or policy of the veterans Administration.

The disadvantages of this combined form of locomotion are that crutches must be carried on the wheelchair, and the wheelchair may not be available when the paraplegic wants to sit down. The first of these problems may be solved by the use of collapsible crutches which can be stored easily on the wheelchair. The second, however, is a drawback for which the paraplegic himself must find the solution.

It would seem from this analysis that rehabilitation should definitely include at least partial brace-and-crutch walking. With this in mind it is clear that braces should be fitted to every possible case of paraplegia. Such braces must act purely as splints and should not have any weight-bearing function. Weight-bearing braces may produce ulcers due to pressure on anesthetic areas over bony projections, such as the ischial tuberosities, and remove some of the weight-bearing function of the bones themselves.

Most publications mentioning the use of braces in paraplegia are of recent origin. The reason for this is obvious, since at no time in the past have paraplegics in large groups lived as long and as healthfully as those produced by the Second World War. In many cases the decision for bracing made by the physician is not accompanied by an interest in their fabrication. Generally, this practice results in excessive and inefficient bracing.

Most frequently long leg braces with a pelvic band or a body brace attached are prescribed. The use of the body brace or pelvic band is objectionable because they are clumsy, are put on with difficulty, consume excessive time, add weight to carry and unless the joints are made with the greatest precision and of special design cannot fit as well sitting as when standing.

Let us consider first the disturbances which these appliances are supposed to prevent. Chief among these is "Jack-knifing" or spontaneous flexion of the hips while standing, due to hip instability or spasticity of the hip flexors. Then there are lateral instability of the hips, outward rotation of the lower extremities and excessive lumbar lordosis. Such lordosis occurs in a paraplegic because in order to be stable in the standing position the hips must be locked against the anterior pelvi-femoral ligaments in a strained extended position. Finally, there is also a psychological aspect in the use of these appliances because of the sense of support they give.

With injuries of the upper thoracic region, and even occasionally in lower cervical lesions, there still remain some very important and potentially powerful muscles which are normally innervated and lie below the lesion level. These muscles, the latissimus dorsi and the lower third of the trapezius, if made strong enough by training, can adequately control the stability of the hips by substitution. This can occur when the normal hip stabilizing muscles are paralyzed as long as the lower extremities are splinted.

The latissimus dorsi has its insertion in the upper end of the humerus and its origin from all the spinous processes from D6 down, the sacrum and from the posterior rim of the ilium. The innervation of this muscle comes from C6-7-8 through the brachial plexus and by way of the thoraco-dorsal nerve. Here is a muscle almost totally below the level of such a lesion in which voluntary motion is retained. The lower third of the trapezius, which also lies below such a level, has its origin from about the 6th to the 12th dorsal spinous processes. Its insertion is the outer end of the scapular spine. Its innervation, being C3-4 through the spinal accessory nerve, by-passes a high lesion. These muscles, when properly trained, can in most cases remove the necessity of using the pelvic band or the back brace.

The latissimus dorsi under ordinary circumstances will adduct, extend and internally rotate the humerus. Were the shoulders to be fixed, the mobilizing end of the muscles would be transferred to the origin. Trapeze artists who fix their shoulders use the latissimusdorsi muscles as a sling to pull the trunk forward and upward (2). If the feet were fixed to the ground and the knees stiffened this action would actively extend the hips. The paraplegic can perform this action by clamping the axillary rests of the crutches between humeri and the body thus fixing the shoulders (Fig. II). Besides this forward pull, these muscles have equal and opposite lateral pulls as long as the axillary rests of the crutches are held with equal pressure on both sides. The swaying of the hips from one side to the other can be easily controlled by tensing one shoulder and then the other (Fig. I). We now have active extension of the hips, locking of the hips in extension by means of the anterior pelvi-femoral ligament and lateral stability of the hips. The lower third of the trapezius will follow the same general rule. With fixation of the shoulders the scapulae are fixed. The mobilizing end of this muscle is now transferred to its origin. This muscle can apply an upward pull from the region of the 12th dorsal vertebra or, in other words from the upper end of the lumbar curve. This pull can straighten the lumbar lordosis (Fig. I and II). It would seem then

that these two large normally innervated muscle groups occuring below the level of the lesion have a very powerful influence on the maintenance of posture and stability. This leaves the external rotation of the lower extremities as the sole disturbance to be accounted for.

Many of the braces made for paraplegics have upper posterior thigh bands which are almost transverse. Instead, the thigh band should be made so that it curves upward and outward to fit loosely into the gluteal fold (Fig. I). This can be done if the outer upward is carried to just below the prominence of the greater trochanter (Fig. II). Now when the leg

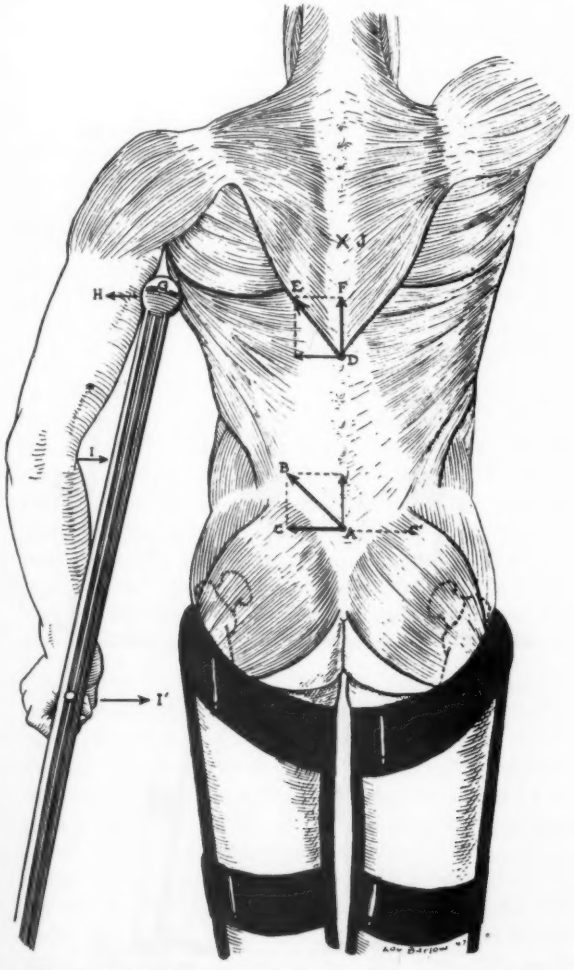

FIG. 1. Resolution of pulling Forces of the lower third of the trapezius and latissimus muscles with fixed insertions show Forces AC and AC1 which counterbalance each other and produce lateral stability.

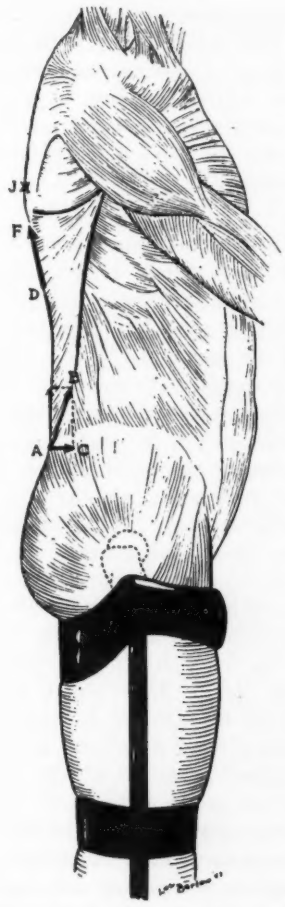

FIG. II. In lateral view Force AC actively extends the hips and Force FD can straighten the lumbar curve.

and brace rotate externally, the gluteal mass acts as a soft tissue block to the rotation of the brace. If bracing is so arranged that the foot is kept flat on the ground, much of this external rotation can be prevented purely by friction. In calipers, the ankle joint of the brace is placed into the heel, an extremely unphysiological position. Since the paraplegic generally stands leaning forward slightly, the axis of the brace moves forward in relation to the axis of the leg, thus tightening the posterior calf band. Since the calf can give only in a limited fashion to this pressure, the heel must come up, thus permitting pivoting to occur on the sole (Fig. III). The stirrup, on the other hand, has the ankle joint of the brace placed at the ankle joint of the lower extremity, a physiological position. Thus, on leaning forward, the axis of the brace moves forward precisely to the same extent as the axis of the leg. There is no tight-

ening of the calf band and no raising of the heel. A combination of a stirrup and a curved upper posterior thigh band is preventive of external rotation. Except for the infrequent cases of internal rotation which do require a pelvic band for prevention, all other reasons for the pelvic band and the back brace seem to be invalid.

There are certain other points to consider in the fabrication of these braces. They should be made so that they can be put on easily and quickly. In order to accomplish this, a minimum amount of cuffs and lacing should be required. A well fitting knee cap can adequately replace all anterior cuffs and straps, except one single narrow anterior strap on the upper end of the brace to prevent the brace falling off the leg when the knee is unlocked. This is in accord with the universal three-point principle with which all braces are manufactured. A point of pressure at the knee and two points of counter pressure, one at the upper posterior thigh band and the other at the posterior calf band or the counter of the shoe can fulfill this principle most efficiently. The knee cap should be loose enough so that the knee, when weight-bearing, should have about five degrees of flexion. This has been found to reduce the amount of stimuli coming from stretched calf and hamstring muscles in spastics. A heel raise will also reduce the amount of stretch of the calf muscles. Tightly fitting shoes may stimulate the reflexogenic areas of the feet and increase spasticity. Thus shoes should at least be roomy and preferably made of soft leather.

Using these principles, it has been possible to remove all pelvic bands and all back braces from those who had been wearing them for a long time, occasionally for years. And we never attached them to the braces of a new paraplegic. No disturbing results have been observed and the contribution to the paraplegic's efficiency and sense of freedom has been great.

While the picture presented has been that of the paraplegic with the complete anatomical or physiological lesion, the principles elaborated are probably applicable to the incomplete lesion with modifications as necessary. Such modifications should always be in the direction of decreasing the amount of bracing to be used.

Conclusions

(1) Total or partial crutch-and-brace walking is an integral part of the rehabilitation of the paraplegic.

(2) Pelvic bands and back braces attached to the leg braces are rarely, if ever necessary.

(3) The latissimus dorsi and the lower third of the trapezius should be trained to replace the functions of these appliances.

(4) The posterior upper thigh band should be curved to fit loosely into the gluteal fold in order to prevent external rotation.

(5) Stirrups, instead of calipers, should be used exclusively.

The author wishes to express his thanks to the Medical Illustration Service of the Bronx Veterans Administration Hospital, Bronx 63, N. Y., for the preparation of the plates. He also wishes to thank Mrs. Helen Mahoney for her aid in preparation of the manuscript.

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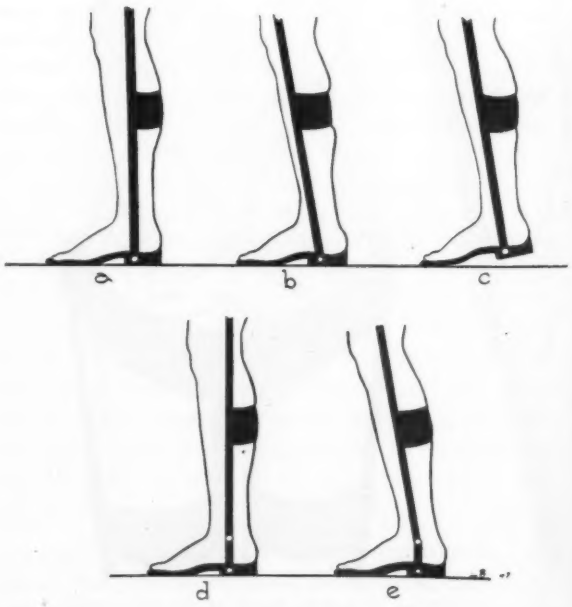

Fig. III. Mechanics of the caliper and stirrup

Instruction in Physical Orientation and Foot Travel

The Industrial Home for the Blind
520 Gates Avenue, Brooklyn 16, N. Y.

January, 1950

PART II

PHASE V

PURPOSE: To teach the client to use the cane in ascending and descending steps.

LESSON PLAN No. 9

1. *Specific Objective*

To teach the client how to use his cane in preparing to ascend steps, to make the ascent, and to resume walking after having completed the ascent.

2. *Procedure*

a. Instruct the client that, as the tip of his cane comes in contact with the bottom step of an ascending flight of steps, he should hold his cane firmly against the step and walk forward until his toes touch the riser on either side of the cane. Instruct the client that, standing in this position, he should, with his left hand holding the cane, run the tip of the cane to the left along the tread of the first step until it contacts the end of the step on the left side. return the tip of the cane to him, and run the tip of the cane along the tread to the right side of the step.

b. Instruct the client to hold the tip of his cane firmly on the right side of the step and to move to the right so as to place himself in a position to ascend the steps on the right side. Advise the client that, having determined the width of the step, he should determine the height and depth of the step before making the ascent; and instruct him, accordingly, to run the tip of his cane from the front to the back of the tread of the first step and from the bottom to the top of the riser of the second step.

c. If the steps do not have a bannister, instruct the client that, with the cane held in the position employed in either the rhythm technique or indoor method of using the cane, he should rotate his arm outward so that his elbow is brought forward at approximately the height of his shoulder and the cane is held in a perpendicular position in front of the center of his body at a height which will place the tip of the cane against the nosing of the second step. Point out to the client that, with his cane in his position, the tip of the cane will tap each step as he makes his ascent, two steps ahead of him so that when the tip of the cane fails to contact a step, it will indicate to him that he is one step from the top of the stairs.

If the steps do have a bannister, instruct the client to grasp the bannister with his right hand and to hold his cane lightly between the thumb and forefinger of his left hand (the other fingers resting lightly along the shaft of the cane to give it stability) in a perpendicular position in front of the center of his body at a height that will place the tip of the cane against the nosing of the second step, and, in ascending the steps, to use the cane in the same manner as indicated in the foregoing paragraph.

Point out to the client that, if the cane is held loosely enough to permit it to bounce lightly off the nosing of each consecutive step and the arm holding the cane is held rigidly, the cane will not only indicate the approach of the top of the stairs but will serve to detect tripping hazards while the arm will serve as a bumper to protect him against any large obstructions on the stairs.

d. Instruct the client that, as he reaches the landing on an ascending flight of steps, he should employ the indoor method of using the cane or the rhythm technique—whichever may be more suited to his surroundings—to find the continuation of the stairs. Point out to the client that, where there is a bannister, the bannister will frequently be found to continue across the landing and thus indicate the continuation of the stairs.

e. Instruct the client that, upon reaching the top of the flight of steps, he should extend his cane forward, moving the tip along the floor, in front of the foot opposite the hand holding the cane, to determine whether any tripping hazards or obstructions lie in the area immediately in front of him before resuming walking.

f. Afford the client ample opportunity to practice, under supervision, preparing to ascend steps, making the ascent, and resuming walking after having completed the ascent.

LESSON PLAN No. 10

1. *Specific Objective*

To teach the client how to use his cane in preparing to descend steps, to make the descent, and

to resume walking after having completed the descent.

2. *Procedure*

a. Instruct the client that, as the tip of his cane detects the edge of a descending step through the use of the rhythm technique, he should hold the tip of the cane firmly on the edge of the step and walk forward until the toe of his left foot protrudes slightly over the edge of the step. Instruct him to then extend the tip of his cane forward and downward to determine whether he has reached a single step or the head of a flight of steps. Instruct the client that, after he has determined that he has arrived at the head of a flight of steps, he should place the tip of the cane on the tread of the step below him and move it to the right until it contacts the right side of the step. Instruct him to hold the tip of the cane firmly on the right side of the step and to move to the right so as to place himself in a position to descend the steps.

b. If the steps do not have a bannister, instruct the client to continue to grasp his cane in the manner employed in the rhythm technique, but to drop his arm to his side so that the tip of the cane extends a few inches beyond and below the edge of the step below him and to hold his other arm in the same manner employed in traveling indoors without a cane but with the arm at approximately belt level. Point out to the client that, as he descends the steps with his arms in these positions, the tip of his cane will move freely over the edge of each successive step until he reaches the last step, at which point it will tap the floor, and that the tip of the cane will also serve to detect any tripping hazards while his other arm will serve to protect him against any large obstruction on the steps.

If the steps do have a bannister, instruct the client to grasp the bannister with his right hand and to hold his cane in his left hand in the manner employed in the indoor method of using the cane but to drop his arm and to rotate his hand slightly outward so as to cause the tip of the cane to extend a few inches beyond and below the edge of the step below him. Point out to the client that, with the cane held in this position, the tip of the cane will move freely over the edge of each successive step until he reaches the last step, at which point it will tap the floor, while, at the same time, it will serve to detect both tripping hazards and any large obstruction on the steps.

c. Instruct the client that, when he reaches the landing on a flight of descending steps, he should use the rhythm technique to find the continuation of the steps. Point out to the client that, where there is a bannister, the bannister will frequently be found to continue across the landing and thus indicate the continuation of the stairs.

d. Instruct the client that, upon reaching the bottom of the flight of steps, he should extend his cane forward, moving it along the floor, to determine whether any tripping hazards or obstructions lie in the area immediately in front of him before resuming walking.

e. Afford the client ample opportunity to practice, under supervision, preparing to descend steps, making the descent, and resuming walking after having completed the descent.

POINTS TO BE OBSERVED

Does the client do the following:

1. Keep the cane tip at the bottom step as he walks up to it?
2. Move to the right side of the stairs and grasp the bannister, if there is one?
3. Check the width, height, and depth of the step?
4. Tap each step, two steps ahead of him, as he ascends?
5. Hold the cane in the correct position and loosely enough to permit it to bounce lightly against each successive step?
6. Recognize the top of the stairs and avoid taking an extra step?
7. Keep the cane tip on the edge of the down step as he walks up to it?
8. Place his left foot so that his toe protrudes slightly over the edge of the step before determining whether he has approached a single down step or a flight of descending steps?
9. Move to the right side of the stairs and grasp the bannister, if there is one?
10. Hold the cane so that the tip just misses the edge of each step below him as he descends?
11. Recognize the bottom of the stairs by the tap of the cane and avoid needless shuffling or stumbling?

PHASE VI

PURPOSE: *To teach the client to follow a guide comfortably and safely.*

LESSON PLAN No. 11

1. *Specific Objectives*

a. To teach the client a convenient method of following a stranger across a street or through a

similarly hazardous area of limited extent.

b. To teach the client a comfortable method of following a companion for an extended period of time.

c. To teach the client to follow a guide through highly obstructed areas, involving the use of narrow passages.

2. *Procedure*

a. Instruct the client that, when accepting guide service under conditions in which close contact with the guide might not seem appropriate or in which speed of establishing and breaking contact may be required, he should lightly grasp the upper part of the forearm of the guide, with his thumb on the outside, and follow about one-half step behind the guide. Point out to the client that, in following a guide in this manner, a certain amount of lost motion between the movement of the guide's body and the arm of the guide is inevitable and that, consequently, it is important for him to walk slightly behind the guide in order to allow for the lost motion between the movements of the guide's body, his interpretation of these movements through the guide's arm, and his response to them.

b. Instruct the client that, when following a companion for an extended period of time, he should place his arm through his companion's arm, let his hand rest on the lower part of his companion's forearm and walk abreast of his companion. Point out to the client that, walking with a companion in this manner, will place the back of his wrist against his companion's hip and will provide a direct means of interpreting the movements of his companion's body and that it will also tend to synchronize his step with that of his companion so that response to his companion's movements will be virtually simultaneous. Point out that this method of walking with a companion will be found to be comfortable under ordinary conditions; but that in ascending or descending high steps—such as in boarding or leaving a bus—it will be advantageous to drop one step behind his companion and allow his hand to drop to his companion's wrist (with his thumb on the outer side of his wrist) in ascending a step, and to move his hand to his companion's upper arm (with his fingers lightly resting on the back of his companion's shoulder) when descending a step.

c. Instruct the client that, in following a guide in extremely close quarters, he will find it helpful to grasp his guide's wrist and walk at least one full step behind him in order to provide sufficient flexibility to maneuver through passages that may be too narrow to permit two persons abreast to pass.

d. Instruct the client that, if he wishes to use his cane while following a guide, he should hold the cane in the manner employed in the rhythm technique, except that he should hold it about one-third of the way down the shaft with his elbow straight and his arm dropped to his side with his hand a few inches in front of him so that the tip of the cane is held in a fixed position about two inches above the pavement and a few inches in front of and to the side of his body.

e. Afford the client ample opportunity to practice, under supervision, the various methods of following a guide.

POINTS TO BE OBSERVED

Does the client do the following:

1. Step up and down curbs without stumbling?
2. Turn when his guide turns without hanging back or crowding his guide?
3. Begin the ascent and descent of stairways without stumbling or falling?
4. Resume walking after ascending or descending stairways without taking an extra step at the top or shuffling at the bottom?
5. Board and leave busses and similar transportation facilities without apparent fear or hesitation?
6. Synchronize his step properly with that of his guide and walk along with him in a free, relaxed manner?

PHASE VII

PURPOSE: *To increase the client's awareness of sensory cues of aid in physical orientation and to provide the client with exercises for developing the use of his senses to improve his physical orientation and ability to travel alone.*

NOTE: *If the client has any amount of usable, residual vision, he should be blindfolded during his participation in the exercises set forth below.*

LESSON PLAN No. 12

1. *Specific Objective*

To increase the client's awareness of the importance of auditory localization in physical orientation and to provide him with exercises to develop his ability to localize sound.

2. *Procedure*

a. Talk to the client from a distance of about 5 feet and ask him to approach you and place his hand on you while you continue to talk. Repeat the procedure at 10 feet, at 20 feet.

Talk to the client from a distance of about 5 feet and ask him to approach you and place his hand on you; but cease talking as soon as he begins to

move in your direction. Repeat the procedure at 10 feet, at 20 feet.

Allow the client ample opportunity to practice these exercises.

Caution: Ask the client to indicate the position of your voice by approaching you and touching you, as specified above. Do not be satisfied with the client's pointing to you instead of approaching and touching you, as pointing will not enable him to adequately appraise the degree of his error and to appreciate the extent of improvement that may result with practice.

b. Instruct the client to walk along the center of the sidewalk in an area where the building line is regular and immediately adjacent to the sidewalk, and where a large recess in the building line exists. (e.g. The front of the building from 512 to 524 Gates Avenue and the recess at the entrance to 520 Gates Avenue.) If the client does not wear leather heels, instruct him to snap his fingers repeatedly or provide him with a device to create a regular clicking sound. Point out to the client that, as he moves along the building line, the refraction of the sound which he is setting up should enable him to sense the presence of the building line, an interruption in the building line or a marked change in its distance from his movement, through a change in the quality of the sound, increased echo as the building line recedes into a recess, reduced echo as the building line protrudes toward his line of movement, and an absence of any sense of sound at point of refraction where the building line ends. Instruct the client to walk up and down the sidewalk and to stop as he comes to the end of the building line at one end of his course of movement, and at the recess in the building line at the other end of his course of movement.

Afford the client opportunity to practice these exercises extensively, under supervision, until he is clearly aware of the changes in the quality of the sound he sets up which is affected by the changes in the building line along which he is moving or until it is clearly established that he is unable—perhaps, because of a hearing defect – to detect the sound quality involved.

Advise the client that he may find it helpful to make it a practice to wear leather heels; but caution him against the increased likelihood of slipping when using leather heels and suggest that he may wish to weigh the advantages of wearing them against the possible hazard which it may entail before deciding whether or not to wear them.

Caution: Conduct the foregoing exercises at a time when the noises in the street are least likely to be distracting and when there are no special sounds emanating from the vicinity of the recess or the end of the building line—such as the sound of sewing machines that emanates from the Mop Department windows adjacent to the recess of the building—by which the client might detect changes in the building line without interpreting the sounds upon which the exercises are based.

c. If the client has found that he is able to detect the proximity of large objects, as indicated by his ability to detect changes in a building line, instruct him to indicate when he thinks he is passing a pole, tree, hydrant, or similar object, as he walks along a sidewalk. Do not ask him to discriminate as to what objects he may be passing; but request him merely to indicate when he thinks he is passing an object.

Continue this exercise until the client is satisfied that he possesses the ability to detect the proximity of fairly large objects with sufficient accuracy to serve as an aid to his avoidance of unnecessary collisions in traveling.

TESTS

Place ten stakes or other suitable anchor points equidistant from each other so as to describe a semicircle with a 15-foot radius. Stretch a series of lines from an anchor point at the center of the diameter to each stake and mark each line at 5-foot and 10-foot distances from the center point. Station the client at the center points. Using a whistle, tuning fork, clicking device, or other appropriate instrument create a sound at any one of the peripheral points or points marked on the lines, and ask the client to place his hand on the line which he believes leads to the source of the sound and to indicate from which of the three points on the line the sound is emanating.

Repeat this procedure from several of the points, selecting the points at random; and repeat the test with sounds of different quality – a musical tone as opposed to a click—and with sounds of widely different pitch.

Sustaining or repeating the sound until the client selects the line which he believes leads to it and indicates the point on the line from which he believes it emanates will provide a test of the client's auditory localization in which responses will not be affected by faulty coordination; and, allowing a silent interval to elapse between the sounds and the client's indication of its source will provide a test of the client's memory for localized sound, similarly free from the effects of faulty coordination.

For purposes of establishing standard performance on the basis of extended experience, it will be advisable to record error in terms of (1) the degree of the angle formed by the line on which each sound is created and the line which the client indicates he believes is the one leading to the source of the sound (it will be noted that the angle formed by any two adjacent lines is 20°), and (2) the difference between the distance from the point at which each sound is created and the client's indication of this distance.

LESSON PLAN No. 3

1. *Specific Objective*

To increase the client's awareness of the importance of kinesthetic memory in physical orientation and to provide him with exercises for utilizing his kinesthetic sense and for developing his kinesthetic memory.

2. *Procedure*

a. Call the client's attention to the fact that the kinesthetic sense is the composite of the sensations resulting from the tensions and pressures upon muscles, tendons, and joints involved in bodily movements, and impress upon him that this sense, in conjunction with his tactile sense, is the basic means through which he is able to obtain fundamental, concrete information about his environment. Point out to the client that efforts to develop the use of the kinesthetic sense and to improve kinesthetic memory are frequently inadequate or entirely lacking in the training of the blind, and that, therefore, it is important for him to increase his awareness of his use of this sense in his day to day activities and thinking and to seek out ways of developing its use.

b. Direct the client, under supervision, to ascend a flight of steps without using the bannister or a cane, and without counting the steps. If he takes an extra step at the top, direct him to repeat the exercise in the same manner until he is able to accurately determine his arrival at the head of the steps.

Repeat this exercise with intervals of one day or more between repetitions until the client can accurately determine his arrival at the head of a familiar flight of steps on the first trial.

c. Mark off any distance along a sidewalk—20 feet, 25 feet. Station the client at one end of this distance and walk with him to the other end. Then ask the client to continue walking, without counting his steps and to stop when he thinks that he has covered a distance equal to the original one. Measure the second distance he has walked and advise him of the difference between it and the first distance.

Repeat this exercise from time to time until the error in the client's comparison of the two distances is reduced to a minimum.

d. Mark a height on a pole or a wall—5 feet, 6 feet. Place the client's hand on the mark, ask him to remove his hand, to lower it to his side, and walk to some other location, several paces distant, and place his hand at a height which he estimates to be equal to the one that has been marked. Measure the height indicated by the client and advise him of the difference between it and the one originally marked.

Repeat this exercise from time to time, until the error in the client's comparison of the two heights is reduced to a minimum.

e. Prepare a bundle of 7 sticks, graded in length by 2 inches from 33 inches to 45 inches. Place the bundle of sticks horizontally, in random order, on a table in front of the client and ask him to pick up each stick by the center, judge its length by the span of his arms, and lay it down on another table in order of size with the smallest stick nearest him and each next longer stick consecutively farther away from him.

Repeat this exercise from time to time, until the error is reduced to a minimum.

LESSON PLAN No. 14

1. *Specific Objective*

To increase the client's awareness of the importance of the olfactory sense in physical orientation and to provide him with exercises for developing the use of this sense.

2. *Procedure*

a. Call the client's attention to the fact that his olfactory sense tires quickly and impress upon him that, if he uses it to advantage, he must be alert to recognize and use quickly the information he derives through it.

b. Select a group of different types of materials, having distinctive but nonpungent odors — newly cut wood, rubber, leather, etc. — and ask the client to identify each material by its odor.

Repeat this exercise from time to time until the error is reduced to a minimum.

c. Direct the client to walk down a shopping district street and ask him to identify, by the odors, each store that has a dictinctive odor. Then, ask him to follow the source of some of the odors to the entrances of the stores from which they emanate. If he shows lack of familiarity with any odor which

is distinctive enough to be identified, accompany him into the store and, if it can be arranged, permit him to examine tactually the merchandise of the store and any other distinctive features.

Repeat this exercise until the error is reduced to a minimum or until it is clearly established that the client does not enjoy sufficient olfactory sense to be of use to him.

PHASE VIII

PURPOSE: *To provide the client with opportunities to apply the techniques, methods, and abilities with which the foregoing lesson plans have been concerned to his day to day travel requirements.*

LESSON PLAN No. 15

1. *Specific Objective*

To provide exercises for, and practical tests of, the client's application of the techniques, methods, and abilities, in which he has been instructed, to his day to day foot travel requirements.

2. *Procedure*

a. After accompanying the client to an appropriate location, ask him to go to a destination which will involve his walking several blocks, through a quiet area, over regular pavement, and with no streets to cross—such as one of the walks bordering Prospect Park. Observe, from a distance, the client's posture, poise, use of the rhythm technique, and response to sensory cues. Make note of such observations and discuss them with the client after he reaches his destination; but do not offer any advice or aid to the client along the route, unless his safety should be clearly threatened.

b. Following the procedure indicated above, ask the client to go to a destination which will involve his walking several blocks, through a quiet area, over irregular pavement, providing fairly regular building, fence, or curb lines and with streets to cross—such as the residential area of many of the side streets between Gates Avenue and Fulton Street. In addition to the points for observation in the foregoing, note the client's manner of requesting assistance in crossing streets, the conditions under which he will decide to cross streets unassisted, and the care with which he makes such crossings.

c. Following the procedure indicated under "a" and "b", ask the client to go to a destination which will involve his walking several blocks, over irregular pavement, with fairly busy streets to cross and a moderately high level of background noise and providing no regular building, fence, or curb lines—such as the vicinity of Lafayette Avenue and Tompkins Avenue.

d. Following the same procedure as referred to in "c" above, ask the client to go to a destination which will involve his walking several blocks through a central shopping area with heavy pedestrian and vehicular traffic—such as the downtown Brooklyn area.

e. Repeat as often as may be required the exercises outlined above in which initial performance proved less than satisfactory.

LESSON PLAN No. 16

1. *Specific Objective*

To help the client to develop the ability to use common transportation facilities with self-confidence and safety.

2. *Procedure*

a. Accompany the client to a bus terminal and, enlisting the cooperation of the personnel in charge, assist the client to carefully examine the layout of several of the types of busses commonly used for public transportation in the city. Help him to observe the location of the doors, the height of the steps, the location of the coin box, the rails and straps provided for the support of standing passengers, and all other features of importance to the client's safe and efficient use of bus transportation, including bus stop stanchion signs and any other item or features that might help him identify bus stops.

Accompany the client on a bus ride and help him to become alert to turns along the bus route, to main bus stops at which, ordinarily, large numbers of passengers leave or enter the bus, to points at which the bus may pass under an elevated or over car tracks, and to any other features of the trip which might be used by the client as cues to his whereabouts. Advise the client to memorize at least the main stops along any bus route which he may have occasion to use frequently and, at all times, to ask the driver to announce the street of his destination and, if he has any doubt as to the driver's dependability in carrying out his request, to ask a passenger to tell him the whereabouts of the bus as often as may seem necessary.

Following the procedure outlined under "a" and "b" in the foregoing lesson plan, ask the client to go to a destination which will entail his use of a bus.

b. Following the procedure outlined and referred to above, assist the client to acquire the information important to his safe and efficient use of trolley-car transportation.

c. Select a route of travel entailing the use of a subway line on which the stations used for traveling in one direction are essentially an accurate

(*Continued on Page* 31)

Outdoor Gymnasium for Corrective Therapy at Togus Veterans Administration Neuropsychiatric Hospital

Leon R. Burnham, M.D., Chief, Physical Medicine Rehabilitation Service
Charles Bader, Chief, Corrective Therapy

At Togue, Maine, we have a Veterans Administration Center consisting of a Regional Office, a General Medical and Surgical Hospital and a Neuropsychiatric Hospital.

There is one department of Physical Medicine Rehabilitation which serves the two hospitals. Owing to the fact that our Corrective Therapy personnel is small in number, we have used them almost exclusively during the past three years in rehabilitation of neuropsychiatric patients. Further reason for this emphasis is the fact that the neuropsychiatric hospital has a larger number of patients, most of whom require individual attention or instruction in small groups.

It was felt that many ideas used and experience gained could be of benefit to others interested in this phase of therapy.

In implementing a Corrective Therapy program which would be interesting to the patient as well as meet his needs, certain considerations are necessary. First, a prescription by the ward physician indicating the treatment aim, e.g. to arouse and stimulate interest, or relieve aggressions and hostility, etc. Second, the physical limitation or handicaps such as heart condition, epilepsy, and the prescribed dosage of exercises or activity to be administered. This may also be stated in terms of light, moderate, or vigorous exercise. Indication of special precautions are vital when handling patients with elopement, suicidal and homicidal tendencies. Many accidents and elopements have been prevented because of an understanding and awareness of these conditions. Age is an essential since it is advantageous to place older patients and younger patients in separate groups due to their diverse interest and motor capabilities.

Also to obtain a more homogenous activity group, patients need to be selected and grouped on the basis of response in activity. For example, those who react slowly, in an abstract manner or to simple activities only, should be in one group. Patients who have a fair degree of spontaneity and interest and engage in activities involving two or more movements should be in another group. Finally, those patients who respond to additional skills demanding more complex movements, thought, and coordination should be placed in another group. This classification serves as a means of advancing a patient who is improving to a higher level of physical activity.

Of utmost importance is the challenge which patient interest presents since all too frequently boredom and apathy prevail. We have met this problem by offering the patients a variety of semi-active and vigorous activity so that each will discover, select and participate in activities of his own choice.

Within an outdoor area 150 yds. by 100 yds. approximately thirty-five modified activities are set up. For the hyperactive, seclusive patient there is rowing, stationary bicycling, tetherball play, light and heavy bag punching, chinning, rope skipping, reconditioning exercises, jogging, pulley weight, sit-up and push-up exercises on special adapted equipment. For the non-seclusive patient there are such vigorous socializing activities as softball batting, catching and fielding, box hockey play, tumbling skills, and medicine ball activity. (Instruction in basic skills is given in bowling, badminton, basketball, and football). For the older, more regressed or physically handicapped patient there are quieter and more relaxing activities involving basic skills such as putting on the green, ping pong, horseshoes, shuffleboard, croquet, golf, ring toss, bean bag toss, etc. Most of the equipment and facilities are home-made and have been constructed by several ingenious patients at very low cost.

Ground Plan of Corrective Therapy Outdoor Gymnasium

Numbers on left correspond to numbers on photograph.

MODIFIED GOLF ACTIVITIES

1. *Croquet Golf*

   Equipment, croquet mallet and ball. Course consists of 12 stations arranged in clock fashion with an off-center hole. Stations are marked by colorful miniature pennants varying in distances from 23 ft. to 30 ft. from center hole.

   Putting on the Green

   Equipment, putter and golf ball. Game played on above course.

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2. *Croquet Putting*
   Equipment, croquet mallet, wooden ball 2¼ in. in diameter—course consists of 4 holes.
3. *Golf Driving Range*
   Equipment, rubber mat with ball attachment, driver, and scoring target.
   A card "What's Your Score" has been printed for the therapists' use which includes name, ward, date of performance, and a scoring chart for the three golf activities mentioned above. This technique is used as an evaluation of the patient's progress.
4. *Modified Croquet*
   Equipment, croquet mallet and ball – shortened croquet course.
5. *Basketball activity*
6. *Modified Bowling*
   Equipment, 10 candle pins and 3 bowling balls. Home-made alley constructed of a wooden base 4 ft. wide by 32½ ft. long and covered by metal sheet strips 3/32 in. in thickness. A wooden gutter permits the balls to be returned to the bowler.
7. *Softball or Football Target Toss*
   Target diameter 1 ft. 6 in., height from ground is 3 ft. 2 in. Distances of throw are 5 ft. to 25 ft. from target.
8. *Modified Court for volleyball, badminton, deck tennis, and cabinetball*
   36 feet in length, 22 feet in width.
   Basic skills in above activities are instructed.
9. *Tetherball Activity*
   Standard equipment. Variation: One patient may punch or slap the ball once in one direction and then repeat the action in the other direction thereby simulating a punching bag.
10. *Area for Informal Activities.*
    Elementary skills in softball, football, medicine ball activities, and low organized games.
11. *Goal Hi*
    Adapted basketball play.
12. *Quoit Target Toss*
    Equipment, five quoits, target 2 ft. 9 in. in width by 2 ft. 3½ in. in length. Ten dowels on target have different scoring values.
13. *Bean Bag Target Toss*
    Equipment, five bean bags, target 2 ft. 8 in. in width, 3 ft. 2 in. in length and has nine scoring holes.
14. *Tumbling Skills*
15. *Rowing Machine*
16. *Ping Pong Play*
17. *Striking Bag*
18. *Chinning Bars*
    Equipment, consists of 1½ in. piping; low bar 7 ft. 7 in. high; high bar 8 ft. 3 in. high.
19. *Heavy Punching Bag*
20. *Modified Horseshoe courts*
    30 ft. in length.

Additional equipment for activities not shown.

a. Pulley weights
b. Stationary bicycling
c. Sit-up exercise apparatus – equipment consists of board 2 ft. in width, 6 ft. 2 in. in length. Elastic band attached to board to hold patient's legs down during exercise.
d. Push-up exercise apparatus—Stand 1 ft. 7 in. high, supports two 1 in. pipes, 2 ft. 1 in. apart and 3 ft. 8 in. in length. Permits two patients to do push-ups at same time.
e. Box Hockey—Standard equipment, homemade.
f. Shuffleboard Court
g. Tackling Dummy—Adapted heavy punching bag for tackling, sawdust pit, 18 ft. long, 10 ft. wide.
h. High Jumping—Above sawdust pit is used.

Activities having the most socializing value are those in which a group participates jointly or in competition and which results in joy, fellowship, pleasant conversation and fair play.

To sustain interest, activities must be modified to fit the patients' physical ability, interest, and prevailing mood. The effectiveness of physical activity as a therapeutic agent is directly related to the challenge it offers and the degree of success it permits each patient to attain.

The incentive among patients will not be stifled if the instructor will see that the sides are even. For example, when patients are paired off as partners in shuffleboard, horseshoes, or other similar games, have a strong player and a weak player pitted against players of approximately the same abilities. With regressed patients who have a short interest span it is necessary to announce a score frequently and praise good attempts. This technique will help keep the game alive and stimulate interest. Score cards are used by the instructor to evaluate the patients progress.

Many patients who engage in fantasy play or respond automatically in activity have lost a large part of their mental adaptability and consequently must relearn forgotten skills as well as acquire new ones. Our efforts are directed toward the acquisition of such skills and the restoration of the sense of reality through continued motivation. The process of self motivation will be enhanced if the facilities and equipment are colorful, clean, arranged in an attractive setting, and in good repair. Activity appeal

is also necessary for the handling of a maximum number of patients. It has been found that three corrective therapy personnel can effectively work with 10 to 14 disturbed patients in hourly periods. Thus, more patients can be given treatment in small group activities and yet permit individual control.

Patients who have not shown improvement over a considerable period or who adjust poorly are placed in daily walking groups. This allows the instructor to give more individual attention and time to those patients who really need it and will profit by such attention.

Brief progress notes of the patient's behavior and reactions to activity are sent to ward physicians once a month or more often as he may require. These reports are typed into the patient's clinical folder by the ward secretary and thereby become a permanent part of his record.

Two case histories illustrate the results of Corrective Therapy techniques.

CASE I

Patient L. H., age 23, with a diagnosis of Schizophrenic reaction, unclassified, was assigned to Corrective Therapy for 2 hours daily from the acute service. The ward physician prescribed that treatment was to provide a release of aggressions and hostility and to stimulate his interest. The behavior pattern indicated severe emotional tension. This was particularly evident when he pounded the heavy and light punching bags. On several occasions he held the heavy bag in his arms and hugged and caressed it. Patient was also seclusive, apathetic, untidy, incontinent, and would not talk. He participated in individual physical activities such as bag punching, rowing, pulley weight exercise, jogging, catching ball, etc. These activities were accomplished by the patient only when told what to do and how long to participate.

After three and one-half months the patient improved to the extent that his previous behavior symptoms largely disappeared. He became cheerful, sociable, alert, and participated with good spontaneity. He then was transferred to the intensive treatment ward, assigned to Special Service Sports Section, and given additional responsibilities. After a period of five months in the hospital the patient was well enough to go home on a trial visit and subsequently was discharged.

In conclusion it must be emphasized that in addition to the proper Corrective Therapy activities prescribed, the individual attention, encouragement, and friendliness of the instructors helped this patient successfully through a very difficult phase of his illness.

CASE II

Patient A. M. was shy, indifferent and bewildered when first assigned to Corrective Therapy by the ward physician. If he were asked anything, e.g., how he felt, he would turn his head away and mumble beneath his breath. He was untidy in his dress and disinterested in his surroundings. Although he evidenced preoccupation and distractibility he could be motivated by the instructor to catch and pass a softball, play medicine ball, and attend road hikes. His coordination and concentration were fair and he exhibited little physical effort in the above activities.

Gradually, and with daily encouragement by the instructor, the patient began to show improvement in his attitude and behavior. He now participated spontaneously in softball activities such as catching, passing, batting, fielding, modified croquet, basketball shooting, ping pong, and horseshoes. His coordination and concentration became very good and he displayed a strong interest in the physical activities, particularly in horseshoes and softball skills. His attitude toward the group was friendly and he would assume some responsibility in leading other patients in the Corrective Therapy activities. The patient was cheerful, talked readily, and presented no evidence of pre-occupation or confusion.

After eleven weeks with Corrective Therapy the ward physician felt the patient had improved sufficiently to be placed in the Special Service Sports program. Subsequently, patient A. M. was judged well enough to be discharged from the hospital as well.

The choice of numerous activities can be helpful for patients with a short interest span enabling the therapist to keep the patient occupied for the full length of time that he is assigned to the program.

Helpful Hints

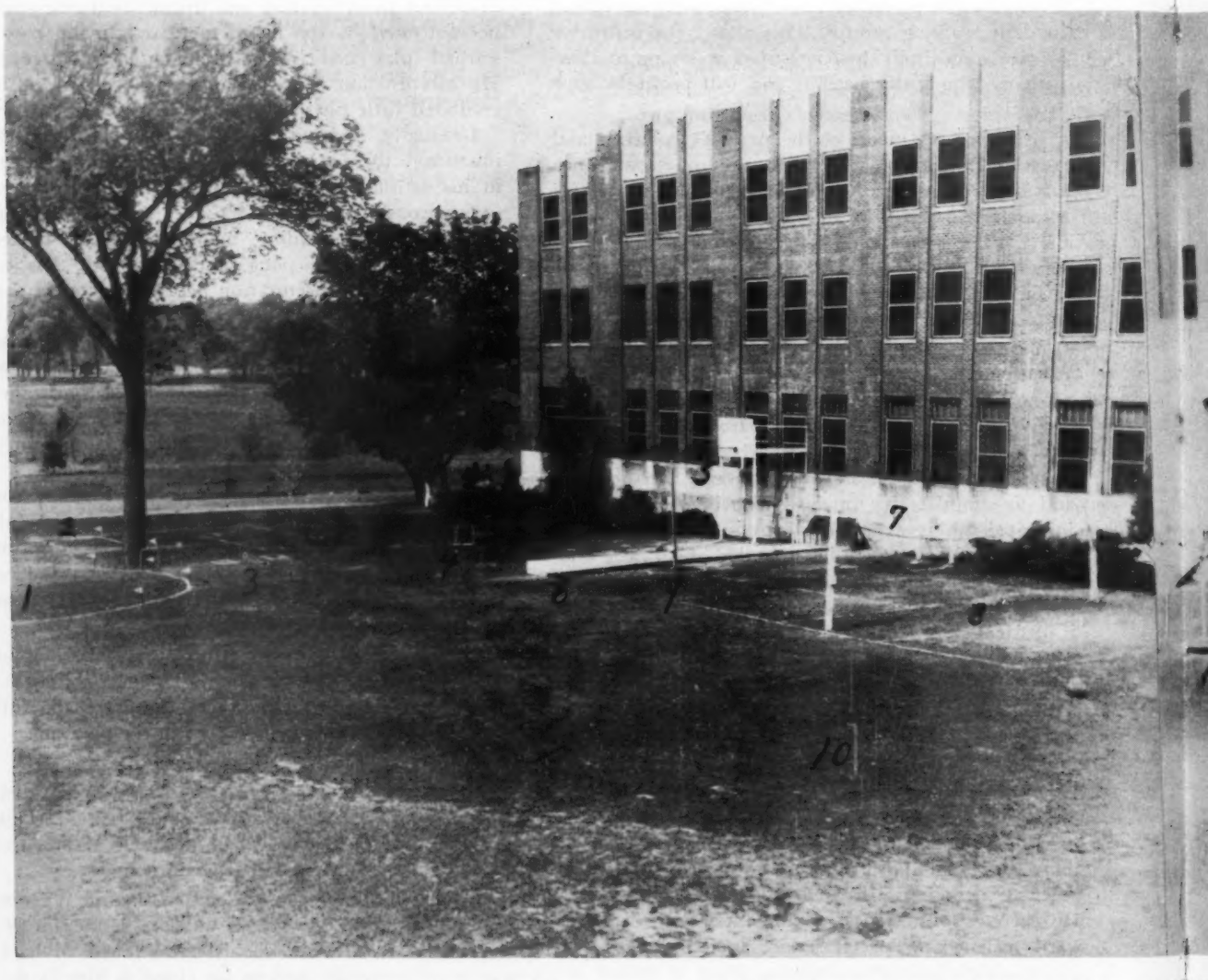
1. The instructor must show enthusiasm in his work and also take an active interest in the patient. This personal attitude will stimulate and help sustain the patient's attention as he engages in activity.

2. The needs of the patient are many. We can help him by being thoughtful and considerate; for example, on closed wards he is not allowed to have matches. Frequently, we can get closer to him by doing such a simple favor as lighting his cigarette. For various reasons, some patients cannot keep belts around their trousers. To prevent the trousers from falling down while engaged in an activity, the instructor should be equipped with short gauze strings to alleviate this condition.

3. Some patients will enjoy rowing and bicycling

(Article completed on Page 21)
See photo on following page

GROUND PLAN OF CORRECTIVE THE



1. Croquet Golf, 2. Croquet Putting, 3. Golf Driving Range, 4. Modified Croquet, 5. Basketball Activity, 6. Modi
Cabinetball. 9. Tether Ball, 10. Area for Informal Activities, 11. Goal Hi, 12. Quoit Target Toss, 13. Bean Bag To
Modified Horse Shoe Courts.

CTIVE THERAPY OUTDOOR GYMNASIUM

ty, 6. Modified Bowling, 7. Softball or Football Target Toss, 8. Modified Court for Volleyball, Badminton, Deck Tennis and ean Bag Toss, 14. Tumbling Skills, 15. Rowing Machine, 16. Ping Pong Play, 17. Striking Bag, 18. Chinning Bars. 20.

Activity and Aphasia Therapy

George Devins, Chief Corrective Therapy. Van Nuys, California
L. J. Yamshon, M.D., Physical Medicine Rehabilitation Service
J. M. Nielsen, M.D., Senior Neurological Consultant
Donald A. Schultz, Ph.D., Aphasia Section
Veterans Administration Hospital
Birmingham, California

It has been known for many years that physical activity gives the normal individual a means of releasing the pent-up energies of mind and body. The expulsion of energy through natural activity is the safety valve for all humanity. Therefore, it is reasonable to assume that a patient experiencing frustration by virtue of a physical or mental limitation will find an outlet through activity. There is evidence to substantiate this belief by physical action and verbal expression while in the act of supervised or directed exercise.

Physical Needs

Some of the more important physical problems that confront the corrective therapist in working with an apathetic patient are as follows: The lack of verbal contact with the patient, gait training in ambulation, disturbed neuromuscular coordination, short muscles and tendons, auditory and visual agnosia, lack of voluntary muscle control, lack of ability to relax, muscle contractures (as in the frozen shoulder) muscles in spasm and clonus, drop foot, wrist drop, and finger contractures. These are a major part of the problems that will need complete concentration by the therapist.

If the therapist is alert, he will be watching for other involvements that might retard the patient's progress. He will see that appliances fit properly, or suggest types of equipment which will assist in the patient's recovery. He will indoctrinate the family in care of the patient and types of equipment which may be used in the house to help maintain his physical level. It is important that the patient be prepared for self-care activities so that he will be able to make a better adjustment to social living.

Mental Needs

The aphasic patients' mental needs differ from the needs of people of normal physique and brain in that they have become, in many cases, nearly totally dependent both physically and mentally. These severe physical and mental losses of ability result in the accentuation of some previous personality characteristics. Usually the following characteristics are marked or obvious in the personalities of aphasic veterans: they are rigid, lack imagination, are extremely easily distracted, give over attention to details, are socially uninhibited, are easily irritated or provoked to anger, lack insight into their losses, have serious difficulties in family and personal relations, usually have considerably reduced available intelligence, evidence much perseveration, and have rapid mental fatigue.

Veterans of World War II generally present a somewhat different prognosis and different set of problems than those of World War I. The World War II aphasic veteran usually may look forward to a gainful economic occupation. For only about one veteran out of 10 is this true for World War I.

World War II veterans need first to develop an attitude of acceptance for their residual handicaps which will always be with them. For many veterans this means accepting a limping gait or walk. It does not mean that he cannot enjoy dancing. For about one-third of the aphasic patients it means the loss of use of one arm and hand. For another one-third it means the severe impairment of one arm and hand. This does not mean that the aphasic veteran cannot enjoy eating out or going out socially to all sorts of social gatherings, when he can accept his handicaps and learn to compensate adequately for them.

World War I aphasic veterans receive the same sort of treatment along with the World War II veterans. However, eight hours of rehabilitation per day is not prescribed for the older patients, as it is for the younger ones. Overwork may be injurious to anyone. It is very unwise, it seems to us, to overwork a person who has heart trouble or a cerebral vascular injury.

Many of these patients come to our hospital with serious disbelief in the prognostications of their therapists and doctors. These disbeliefs are usually well founded. Patients are all too frequently promised by therapists or doctors, "You'll be well in two months," or "You'll be as good as you ever were in a year," or "That arm will be as good as it ever was,

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one of these days." When these "guesses" do not fit the recovery of the patient, as they usually won't if definite lengths or extent of recovery or time are given, not only is the rapport with the patient lost, but serious personality defects may appear in the patient under the strain of such insecurity. Patients are usually happy with the scientific approach of, "Let's see what recovery we can accomplish with everybody helping as much as possible in your efforts to rehabilitate yourself."

Aphasic patients frequently complain that life is not worth living. The number of successful attempts at speech and other adjustive activities during the course of a day or even a month is frequently so small that discouragement and feelings of futility are common. Encouragement toward future goals of ultimate improvement, pointing out specific achievements of adjustive nature and a "selling" of acceptance or willingness to endure and expect present high rates of failure in their attempts, seems to be part of a more rapid recovery rate.

When patients complain about the pains they must endure from paretic leg and arm joints, they are reminded on the aphasia retraining ward that a pulley and other exercises are good, prescribed reliefs that are much better than sedative drugs or complaints to those around them. In general, this helps Corrective Therapy to function at all times during the patients' waking hours. Since exercises are frequently somewhat painful to joints on the disabled side, the patient is encouraged to take a long view in his attitude toward regular attendance at the gym and at ward exercise facilities.

The use of large muscles in learning writing on the writing board and on the desk follows the corrective therapy session of strengthening those same muscles. The finger, hand and wrist are not articulated in the writing procedure. Upper arm, shoulder and back muscles are trained first in the writing skill. Since one-third of the patients relearn writing with the uninjured or nondominant hand, care to prevent mirror writing is needed.

Relaxing while in the sitting position is taught in the Aphasia Clinic. Soft, padded chairs are employed in learning and maintaining relaxation during the retraining periods. This is just one step nearer to social relaxation than the prone position employed on mats in the Corrective Therapy gymnasiums. Clipboards for holding the paper in position while writing are employed for patients who are able to use only one hand in the writing process. Racks for holding reading materials are employed for the beginning stages of reading from books for quadraplegic aphasic patients. Acetate disk speech recordings are made once each month to help the patient become convinced that his progress is real and not the therapist's wishful thinking.

The motor aphasic patient, that is, the patient who cannot find the correct mouth positions for saying words, is best helped to talk in the Corrective Therapy gymnasium as he is taught in the Aphasia Clinic. Usually the patient cannot tell where he is articulating his mouth. Therefore saying the word sound by sound and having the patient imitate sound by sound, visually guided in a mirror, at first is a choice method. After some skill in placing the articulators is gained in this way, the patient can accomplish the same imitative process by direct vision of the therapist's mouth. All of this must be very slow at first but may progress to fairly rapid rates of motor imitation later.

The formulation aphasic patient may have ideas but he cannot recall the words and arrange them in proper order or syntax. These patients are best aided by getting some idea clearly outlined with the therapist. The patient recalls the principal words involved, from hints by the therapist. Usually he can get the name of the principal thing involved recalled and said, such as, "picnic." Then the therapist may say, "Yes, who is going to the picnic?" Usually some proper nouns or pronouns will be recalled. Then the therapist might say, "What about Joe and me and the picnic? Put the words into a sentence. You said, Joe and I (blank blank) the picnic. Can you put the other words in to make a complete sentence?"

The use of half a dozen "carrier sentences" such as "I am (blank)," enables the patient to put many of his ideas into complete short sentences using the same subject and verb. In employing this device the actual recall and formulation necessary for expression of many ideas are reduced to a bare minimum.

Visual guidance is the keynote to all training for the motor aphasic. Audio-visual, with the emphasis on the auditory pattern is the basis of retraining in formulation. The above statements are good general guides to retraining aphasic patients but usually they have mixed types of losses, frequently agnosias (failure to recognize), alexia (inability to read) and other such sensory losses to complicate their communications processes.

The Corrective Therapy approach is to gain the confidence of the patient and alleviate as much mental strain as possible in regard to his physical limitation. In order to gain this end the therapist must use all the skill, ingenuity and human understanding which he is capable of utilizing. A personable

corrective therapist equipped with natural ability and a desire to work with people has a very valuable contribution to make in fulfilling mental needs.

It is important to set simple goals which the patient can easily accomplish in the early stages of recovery. More difficult steps should be gradually introduced to keep parallel with the patient's mental progress. Developing a receptive mind is a very important phase of treatment. In many cases where the patient has known others before him to die in bed and assumes that he is doomed to a similar fate, it is necessary to revamp his entire attitude, which may take long hours of work and illustration on the part of everyone concerned. As time goes on, the patient will realize that he, too, can do as other patients are doing in the "new" work directed towards helping the aphasic patient.

It is possible to fall short in reaching objectives simply because the patient does not comprehend (agnositc or aphasic loss for understandable spoken language) all that is being said. Therefore, it is important for the Therapist to know to what degree the patient is capable of absorbing the directions given and to what extent he will be able to carry them out. For example, the therapist may ask the patient to put his own hand in the sleeve of his coat as the therapist holds it for him, as in self care activities. The result may be as follows: (1) patient responds by grasping coat, (2) patient takes instructor's arm and tries to place it in coat, (3) carries out objective, (4) does nothing. The therapist then does a visual demonstration in the retraining of kinesthetic patterns.

There is true value in developing the patient's sense of humor. Although with the aphasic patient it is more difficult to attain a good level of cheerfulness, nevertheless it is possible through the skill of the therapist's personality to get the patient to not only stay in the area but to enjoy his surroundings and to participate by oral expression, facial expression or gesture of hands or feet.

It is important that the patient be gradually conditioned for any change that is to be made. The patient with an aphasic involvement and particularly the older patients are subject to drastic emotional disturbance upon the introduction of new ideas or changes in environment. One aphasic patient who had been keeping a count of the distances he walked in the gym-clinic by the number of times he passed the thermometer on the wall was at a complete loss when one of the therapists removed the instrument, to check the outside temperature. Another patient was confused, not because the gym clinic was moved but because the staircase was turned around in the new area

Special Opportunity

There is an unusual opportunity for the Corrective Therapist to achieve considerable success with the aphasic patient from the standpoint of physical and mental development and adjustment. However, he must understand that the progress in this area may be very slow and the work tedious, but that the results may be truly gratifying. Problems appearing in this area will require the therapist's undivided attention, and will call on his reserve ingenuity. An alert corrective man is in a position to suggest to the doctor other services that may assist in the patient's recovery, such as Social Service, Special Services, Occupational Therapy, Physical Therapy, Educational Therapy, Vocational Advisement, Manual Arts Therapy, etc. It will necessitate unusual ability and skill on his part to give treatment to the aphasic type patient and still keep within the patient's physical limitations. It must be realized that without an adequate means of contact due to agraphia (the inability to write), alexia (the inability to read) or aphasia (the inability to speak) the therapist must be extremely skilled in order to keep emotional disturbances at a minimum.

Since it is important for the patient to have safety valves for the abnormal amounts of pent-up energies he has harbored within, the gym-clinic becomes an ideal location to work off these energies under capable supervision. While this is being accomplished, he may well be strengthened and guided through special exercises which will assist him with his irregular gait or help him to regain some of the confidence lost since his illness. The affected muscles may be stretched and the antagonists may be strengthened to maintain the amount of recovery gained.

While the patient is actively participating in a phase of treatment, he is encouraged by the corrective therapist to speak. For example one patient working on the staircase always stopped to rest at the top; the therapist urged him to speak by saying, "Let's have a speech, Harry." The patient only smiled and turned and walked back down. For several days this action by the therapist continued. One day the patient smiled broadly and said very clearly and distinctly, "Ladies and Gentlemen," as though he had been practicing for it.

On another occasion a man who speaks in incomplete phraseology was asked by one of the corrective therapists about his interest in sports and golf in particular. The patient immediately gave a brief

history of his interest and achievement in the sport. His statement was smoothly delivered without the usual pauses and interruptions. These examples would indicate that if the corrective therapist is alert he may well contribute to the patient's ability to express himself in a relaxed atmosphere. By following an interest pattern, better results may be acquired. This means that the corrective therapist must study the patient, know about his injury, his family, origin, places traveled, home town and other points of interest. When the patient and his relatives find that the therapist is taking a personal interest, the working relationship between the patient and the therapist will improve tremendously and maximum results may be expected.

Early in the recovery period, the family or relatives with whom the patient is to stay should be invited to the gym-clinic to observe and learn how to handle the patient and know something of the attitude they should assume toward him so that they, too, will gain the best results. It is also at this time that planning can be done for home exercise equipment to assist the patient to improve his physical condition upon leaving the hospital. It is found that when the relatives are properly oriented to the care of the patient, the patient is more content and makes a better adjustment to his home situation. It is good procedure to acquire from the social worker as much information as is possible about the home physical facilities so that no time is lost in setting physical goals toward which the patient may work, eg: information such as distances from the bath to the bedroom, from the living room to the bedroom. Is there a shower or a bath? Does the staircase have railings? How many steps? What type of bed? Are there any bed-posts for patient's support? What equipment will need to be built for patient's use in the house? At this point the corrective therapist and physicians can advise as to the type of equipment necessary.

Preparation for the patient's discharge consists also in preparing him mentally for the goal of home and social acceptance. When the doctors indicate the patient is approaching complete medical status, then the momentum should be stepped up to parallel his medical status. This does not mean early promise or rushing recovery. It is a culmination of effort centered on one patient to assist him in reaching his goal in the shortest period of time and yet having him receive the maximum benefit from the specialized treatments given him during this hospitalization period.

OUTDOOR GYM—(Cont. from Page 15)

more if they are used in conjunction with singing. For example, such songs as "Row, Row, Row, Your Boat" and "Rolling Down the River" can be sung to the rythm of rowing exercise and "A Bicycle Built for Two," etc., can be sung while exercising on the stationary bicycle.

4. A bulletin board is important in depicting visual aids of exercises to guide the patient as he works out. Reading and reciting aloud psychological slogans from the bulletin board, such as: "Never lose confidence in yourself"; "They conquer who believe they can;" "Success is one per cent Inspiration and 99% Perspiration," etc., are important in building of confidence and instilling psychological insight.

5. It is a good safety technique for the instructor to place himself in such a position so that as he engages with the patients or supervises an activity he can see what is happening in the gymnasium. Occasionally a situation will arise that will effect the safety of the patient or the destruction of equipment and property. Here the instructor's clear view and quick judgment can often prevent these hazards.

6. Allow the patient to choose his own activity or game, bearing in mind if the treatment aim is to release aggressions and hostility that it is easier to guide him into more vigorous outlets once he has begun to participate willingly rather than with a feeling that he must do so.

7. It is a good therapeutic approach to work with a small group. If there is a loss of attention and interest, or if a game is completed, try to rotate the group to another suitable activity. This prevents apathy and boredom and exposes the participant to a variety of activities.

8. Be ingenious about the selection of activities for those who are reluctant or need some suggestion. If you know an activity is not suited for a patient he may spoil it for the others if you insist that he participate. Think in terms of adapting the equipment and activities to fit the patient's needs and skill.

9. Packaged prizes of sweets donated by Volunteer Organizations were awarded once a week to patients who excelled in the activities. A worthwhile effect is to see the winners sharing their sweets with the other patients.

10. The use of women volunteers in the program has been a definite asset as they assist, encourage, and work with the patients in semi-active and socializing activities. By their presence they create a natural social environment where men and women work and play together.

The Use of the Pulley Weights in the Treatment of the Multiple Sclerosis Patient

By Stanley H. Wertz, Corrective Therapist
VAMTG, Kennedy Hospital, Memphis, Tenn.*

Multiple sclerosis is an acute or chronic, steadily progressive or recurring disease of the central nervous system. It derives its name from the numerous and widespread lesions which occur in the corticospinal tract and from the multiplicity of its signs and symptoms. The spotty nature of the central nervous system involvement leaves many pathways intact. For this reason the majority of cases of multiple sclerosis offers favorable possibilities of rehabilitation through the retraining of these pathways.

The cause and specific treatment of this disease remain unknown today. Latest research trends seem to be focused on the possibility that it may be caused, precipitated, or at least aggravated by psychomatic factors, such as phychic trauma or an extreme emotional upset.

The disease is more common in northern than in southern countries and in Europe than in America. It is extremely rare in the negro and has seldom been reported in China and Japan. Heredity plays no role, although isolated cases have been reported in mothers and children. It is essentially a disease of early adult life, most cases occurring between the ages of twenty and forty. It occurs equally in both sexes but very rarely in children.

The course of the disease may be stationary, recurring, or steadily progressive. Some remissions have been known to last for periods of five years or longer. The duration of the disease is from two to twenty years with the average being from seven to nine years. Since the cause is unknown and no specific treatment has been advanced, therapeutic exercise and rehabilitation offer one of the best modalities of treatment known to date.

The rehabilitation treatment of multiple sclerosis is complex. The disabilities are as varied as are the symptoms of the disease. The severity of the disability may vary from a mere tingling sensation in one finger to complete invalidism with total blindness, aphasia, and incontinence of bowels and bladder.

A common finding in multiple sclerosis is fatigue. The fatigue is not only on a generalized type but is specific in individual muscles. A strong (100%) muscle can be rendered a weak (10%) muscle after four to six repeated, successive contractions, only again to return to its initial grading after a minute of rest.

For treatment in the therapeutic gymnasium, pulley weights used in conjunction with a treatment table have been found to be very effective with this type of patient. The patient is generally so weak that he can derive maximum benefit from this treatment only in the recumbent and sitting positions. The corrective therapist assists the patient by applying the correct amount of medically prescribed weights, by instructing him in the correct technique of the movement, by explaining why specific exercises are necessary to rehabilitation, and by preventing the substitution of undesirable synergists.

The amount of resistance given at first should be that amount graded to tolerance that the patient can perform correctly a given number of times. As his endurance increases additional weights should be used until maximum resistance is attained over a sustained number of repetitions. It is then and only then that the nervous pathway from the brain to the muscle causing muscular contraction is stimulated and improvement in function results. The correct progression to be used is as follows:

1. Mastery of simple patterns of motion.
2. Working for endurance by adding weights and increasing therapy time.
3. Increasing range of motion on all movements.
4. Using heavy resistance to develop combinations of two or more motions, such as hip and knee extension.
5. Working up to reciprocal patterns of motion necessary to the walking gait.

At this juncture it is important to remember that fifty percent of all multiple sclerosis patients have an intention tremor of cerebellar origin. When a patient of this type has received sufficient strengthening from heavy resistance exercise therapy, he should be switched immediately to a program of coordination and control exercises using submaximal resistance. Continued employment of maximum

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* (This paper was presented at the Fourth Scientific and Clinical Session of The Association for Physical and Mental Rehabilitation in May 1950 at Memphis, Tennessee)

resistance with this type of patient will only result in aggravating the tremor and rendering it worse. This technique should consist of slow, coordinated movements with special emphasis on the "hold." The patient should be trained to make as many as six separate stops during the "hold" on each movement. This factor develops control and coordination at the points in the range where the tremor occurs and has a stabilizing effect.

Let us now consider the case of C. W., a veteran of World War II, who suffered his first attack in the summer of 1945, while serving as an infantry soldier in Germany. The first symptoms consisted of blurred vision and affected him only when he was tired and overheated. He did not attach enough importance to it at the time to report it to army medical authorities. In January 1946, he had his second attack. Along with the visual defect he noticed that he was becoming very weak, tired very easily, that his balance was poor, and that he was having difficulty in walking. He also noted the onset of an intention tremor in his head and upper extremities.

In June 1946, his condition was diagnosed as multiple sclerosis by a prominent Memphis neurologist. The doctor treated him with vitamin therapy until January 1947. The patient was then admitted to Kennedy VA Hospital for treatment. His first admission resulted in a three months' stay, during which time he was treated with drug therapy. After his discharge from the hospital in April 1947, the progression of the disease seemed to abate, and he did not conceive much change until November 1949. During this time he apparently experienced a mild remission, returned to his home in Tyronza, Arkansas, and even tried to farm on a small scale. He had to give it up after a year, however.

In November 1949, he suffered an acute exacerbation of the disease and went steadily down hill. When he was admitted to Kennedy for the second time on February 6, 1950, he had become so weak that he was assigned to a wheelchair. His tremor had also become much worse.

The patient reported to corrective therapy for treatment on February 15. He was started on a program of resistance exercise for the neck, trunk, upper and lower extremities. The equipment used consisted of pulley weights with the patient in various positions on a treatment table. At first emphasis was placed on medium resistance and the mastery of simple patterns of motion. Weights were added and repetitions were increased as the patient showed the necessary tolerance.

After two weeks of treatment the patient began to show an increase in strength and endurance. He was given heavier resistance and his treatment time was increased. He was started on a program of ambulation with crutches, using a four point alternate gait. As his balance and strength improved he gradually shifted to a two-point gait. Emphasis was placed on posture, proper hip and knee flexion and the heel-toe pattern.

During the month of March his improvement was gradual. The extensor muscles of his legs grew stronger, and his endurance on crutches improved to where he could walk 1000 yards without resting. In the last week of treatment he completed every skill on his self-care chart. On March 31, he was discharged from the hospital as an ambulatory patient on crutches. He took home a program of therapeutic exercises and has pulleys installed in his home. His wife had come to the hospital during the last week and learned to assist him in his treatment. Although the patient was obviously still in a progressive phase of the disease, he was much stronger and determined to remain ambulatory.

In summation we can state unequivocally that the treatment of the multiple sclerosis patient must not stop on discharge from the clinic or rehabilitation center. The home exercise program must be continued in order to combat the progressive nature of this disease. In our experience no patient has ever been adversely affected by treatment, even if the disease were still in a progressive phase. Remissions have been more effective and complete when they coincided with treatment. Confinement to bed, except in the most acute cases, tends to produce invalidism and prolong the disability. Vigorous exercise therapy often greatly improves the patient's strength, functional ability, and well being.

(*Note*—An illustrated article, showing the basic exercises, used in the treatment of multiple sclerosis and similar diseases with neuro-muscular dysfunction, will appear in the next issue of the JOURNAL.)

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GOAL-DIRECTED ACTIVITIES IN THE TREATMENT OF SCHIZOPHRENIC PATIENTS

By RICHARD L. JENKINS, M.D.

Chief, Research Section
Psychiatry and Neurology Division
U. S. Veterans Administration
Washington, D. C.

The encouragement of goal-directed activities has a central place in the treatment of schizophrenic patients.

Goal-directed activities are the chief means for strengthening the ego. Successful goal-directed activity is the chief basis for self-confidence, and it is goal-direction which is largely responsible for intelligent self-control and self-discipline. The conscious self is in large part organized around goal-directed activity. A personality tenacious and resourceful in the pursuit of its goals we call a strong personality, and a personality vacillating and easily discouraged in the pursuit of goals we call weak.

Schizophrenia shows a tendency to develop particularly in "shut-in" personalities lacking well defined goals and lacking confidence, realism and resourcefulness in the pursuit of such goals as they possess. Such persons may be described as having a weak ego. Such activity as they undertake is likely to represent a flight from anxiety rather than a pursuit of satisfaction. The individual feels unable to cope with the world. He stops planning and begins day-dreaming. He ceases using thought primarily as a guide to coping with reality and it becomes a means of escaping reality through autistic behavior. As a result, he usually develops a certain degree of unrelatedness to his environment—a turning of attention increasingly inward and a measure of detachment from external reality. With this goes an increasingly faulty perception of feelings of other persons, and a consequent diminishing capacity for emotional resonance with others. The schizoid individual tunes himself out of resonance with his social environment.

An individual may grow out of such an isolated and schizoid state, through increased goal-drives and consequent reorientation and striving, or through changes in his life orientation resulting, for example, from emotional support from others which may enable him to face and cope with, rather than to retreat from, the issues of life.

The schizophrenic patient is distinguished from the schizoid personality in that while the schizoid is merely tending to detach himself from the external environment to protect himself from strain, the schizophrenic patient has undergone a functional break in his personality organization as a result of such strain

Despite the relation between the schizoid and the schizophrenic, they should not be equated. Most schizoid persons never become schizophrenic, and only about half of the schizophrenic breaks occur in individuals previously recognizable as schizoids. Many occur in individuals who have previously appeared adjusted.

Each person has a certain margin of tolerance of frustration. This margin tends to be high in well-organized personalities and low in poorly organized ones. The individual's tolerance for frustration in one area may be substantially greater than his tolerance in another area. Frustration which does not exceed the person's margin of tolerance may result in increased goal-directed activity. Frustration beyond the individual's tolerance tends to disorganize the capacity for intelligent goal-directed effort and ultimately disorganizes the personality itself. Any one of us has known breakdowns in our capacity to drive toward a particular goal, as a result of frustration. In a situation which seems to make no solution possible we experience a loss of mastery and become discouraged. The schizophrenic has experienced frustration such that not only is his grip on particular goals broken, but his personality itself is disorganized.

On the other hand each of us knows from personal experience that "nothing succeeds like suc-

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cess." We have all felt the growth in self-confidence, sense of mastery and resolution which develops from the experience of success. We all have had the experience of finding that the friendliness of others and their confidence in us bolstered an unsteady self-confidence that might otherwise have fallen.

Since a schizophrenic break typically increases the frustration of a person, the schizophrenic disorganization is typically progressive, although potentially reversible. Understanding, kindly treatment will usually help the schizophrenic and in recent acute cases may be sufficient to enable him to re-establish some tolerance for frustration. There is crucial need, however, to rebuild the capacity to deal with reality, through the experience of success, and for this purpose relatively simple and concrete tasks not too far removed from the past experience of the individual are invaluable. Here is the great contribution of occupational therapy.

The schizophrenic patient has in general a conspicuous inaptitude in developing good social relations. Verbal activities encourage full play for his morbid ideas and distorted thinking. Concrete manual tasks do not in general encourage such morbid ideas and distorted thinking. They do encourage at a simple and usually manageable level the resumption of simple planning, and of checking the result of plan and of effort against experience. This encourages a return to reality testing and the use of the mind for realistic appraisal of realities rather than for escape from reality.

The succession of mental states marking the transition from inaction to action is typically related to contemplation of some goal or task. The psychological succession as it usually occurs may be described by the successive sentences:

"It can be done."
"I can do it."
"I will do it."

This progression can be fostered, and leads to action and some measure of effort. The successive solution of a series of tasks of increasing difficulty builds ego strength, self-confidence, and resolution.

As the schizophrenic patient regains some capacity and confidence in dealing with his physical environment, he typically tends to become more ready to try to cope with his social environment. Here the recreational activities are very valuable in that they throw patients together in an emotional climate favorable for the development of good inter-personal relations. For example, team-play encourages group cooperation in goal-directed activities, and offers a bridge for the re-socialization of the re-organizing personality.

Ultimately, of course, the schizophrenic must learn to face and manage the problems which led to his breakdown. This is an area in which psychotherapy is of the greatest value, but it is often advisable to postpone exploration of these problems until the patient has made a great deal of progress in re-organizing his personality. Premature or ill-managed discussion of these problems may easily lead to further disorganization. Is is conspicuous that many patients effectively recover without special psychotherapeutic help, even during this period. The resilience and capacity for adaptation of the human organism are proverbial. The impetus and morale of improvement may be powerful and the paths to solution or partial solution of emotional problems are numerous and diverse.

The schizophrenic who in his period of acute disorganization meets kindliness, an understanding attitude, and gentle encouragement in the use of his capacities in the pursuit of simple goals he can set for himself, is fortunate, and the outlook for his recovery is reasonably good. Special methods of treatment, such as insulin coma, or electroshock, are commonly indicated, but the re-established or realistically oriented goal-directed activity is a central objective, and the special methods of therapy are important largely as they contribute to this.

The medically prescribed activities supervised by the corrective therapist logically form an important part of a program based on this rationale. The therapist must keep central the objective of "educating through the physical" rather than merely "educating the physical." The therapist should not limit himself to formal regimens of exercise, but should encourage and use for therapeutic ends whatever spontaneous play tendencies or play responses may occur. From the whole gamut of possible activities, the therapist should be able to introduce and encourage those most appropriate to the physical, mental, and personality needs of the patient. He assists the patient to establish a more secure attachment to reality through planned activities which draw the patient into significant, if limited adjustments to reality, rather than leaving him to the contemplation of his disorganized ideas. By the very nature of play activities, we are not so prone to experience frustration in them as in most other activities, and in play activities,

(*Continued on Page* 30)

EDITORIAL

Motivating the Patient In Medical Rehabilitation

In all Medical Rehabilitation activities, more will be accomplished in a shorter period of time if the patient is convinced of the personal advantages accruing to him as a result of his participation and of the reason for treatment of certain diseases and disabilities. Knowledge of some of the motivating forces in human behavior will enable the instructor and therapist to understand a little better the patient's reactions to the opportunities offered and will pave the way for the use of techniques to arouse patient interest and cooperative attitudes.

There is a generally accepted theory in the field of Psychology that most human behavior is the result of basic drives or desires. Four desires which play a very important part in human conduct are of particular interest in our Medical Rehabilitation Program. Let us examine them closely and then see what leads we may discover for dealing with patients.

(1) The first of these driving forces is the *Desire for Recognition*. All through life, from babyhood to the grave, the human being strives for attention. When his desire is unsatisfied, the pent-up drives eventually break out in extraordinary behavior. Most of us are more concerned about recognition than we care to admit. It is a natural basic drive.

(2) The second great drive is the *Desire for Intimate Response*. Call it fellowship, friendship, or common interest. In the old days when psychologists had us compartmented into instincts, they included this in the Gregarious Instinct. But it's more than that. Every individual craves comradeship with someone to share his closest thoughts and ambitions. It is almost a spiritual need. Without that intimacy, Man is lonely in the biggest institution or in the largest city.

(3) The third drive is *Desire for New Experience*. The comforts and luxuries of modern living are due to the fact that someone was curious. He wanted to know and found out. So a new invention was born. The baby gets tired of playing in his own yard and toddles out the gate to see what's around the corner. He takes his toys apart to see what makes them go. The boy craves the excitement of adventure and runs off from "Ma and Pa" and the monotony of home. The explorer sets out across the unknown sea and discovers America. Edison's acutely inquisitive mind produces the modern electric lighting system. Doctors, through research, develop the marvels of modern medicine and surgery, adding years to the span of life. The desire for new experience, whether in literature, music, science, arts, or mechanics, is the basis of all education and training.

(4) The fourth drive is *Desire for Security*. Think of it in terms of the law of self-preservation if you prefer. We marvel at the youngster who stuffs his pockets with every conceivable item he can salvage, from string, bottle caps, nails and broken watches, to toads. His fast-working imaginative mind conjures a possible use for such trivia. His pockets are his bank, bank savings, insurance policies, vegetable cellars and storehouses, are more or less tied up with man's desire for security. It is a powerful motivating force.

The activities of Medical Rehabilitation are quite naturally a series of new experiences and learnings for the patient. Because of his injury or illness, he can't work at his old occupation; or maybe he went off to war before finishing training for any job. Now he begins to explore the various fie!ds of activity in which he might achieve rehabilitation. The instructor can make it just routine, or an adventure, as latent skills are developed and new information gained. To capitalize on the desire for new experience, the instructor needs imagination and a creative flair

Every member of the Medical Rehabilitation team, besides playing his part in the treatment of the specific disease or injury, is challenged to help the patient maintain his morale, capitalize on his capabilities and achieve a return to normal living. A word of encouragement coming from the therapist during treatment may be just as effective as the recognition accorded by the Occupational Therapist. The subjects taught by the Educational Retraining instructors may be supplementary to the courses taken in the Shop. The Corrective and Remedial exercises may be the basis for development of the strength and endurance essential to the job contemplated. The total efforts of personnel in all Medical Rehabilitation Units, the sympathy and encouragement of all concerned, must be integrated to the end that the patient will be motivated to help himself into a new world of useful activity.

The President Speaks

In a recent conversation with a well known Physiatrist, the following statement was volunteered, "You people in Corrective Therapy have nothing to apologize for, you should not take a defensive attitude." This man, who rates exceptionally high in his own profession, has spoken words that can well be repeated and echoed whereby others will recognize the progress that is being achieved and, in many instances, under some very difficult circumstances.

Taking a positive attitude, as suggested in the quotation of the above paragraph, let us review our convention schedule. It was an ambitious one, outlined in 1946 at the first Corrective School at Winter Veterans Administration Hospital, Topeka Kansas. It was a general opinion at the time that the first convention be centrally located in order that attendance could be national in scope; however, in years to follow, a transfer would be made from East to West and North to South. This is apparent by the following schedule: Chicago, 1947; St. Louis, 1948; New York City, 1949; Memphis, 1950; Los Angeles, 1951; and Milwaukee, 1952. It is significant to note that, in the original planning, the West was to have the fifth meeting. This definitely indicates that we, as a professional group, are capable of setting and completing a schedule for a period of years —no one can deny that this is sound professional accomplishment.

While we are reviewing accomplishments, it would be unfair to overlook our Journal that has had such phenomenal growth in its professional character and circulation. No one person is responsible for all the progress registered by this periodical. It has been the labor and thought of many people endowed with a spirit that cannot be whisked aside with one word "untrained." It should be emphasized that this exceptional effort has been and will continue to be supervised and directed by the medical profession.

In order to attain success it is best to acknowledge, with honest and unbiased opinion, that it takes many people of related professions showing a magnitude of interests to gain a desired goal. Let us not overlook the fact that many of our own members have applied themselves diligently, often going beyond financial means and jeopardizing position unselfishly to retain professional gains. By this time we are well aware that personal sacrifice is probably the most important prerequisite for any worthwhile profession.

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(Continued on Page 32)

News and Comments

Receives Award

On Friday, September 8, 1950 Dr. Louis F. Verdel, Manager, Veterans Administration Hospital, Northport, New York, received a handsomely embellished Certificate of Merit from the Lt. John M. Cumming Chapter No. 19 of the Disabled American Veterans. The certificate was presented to Dr. Verdel in front of the hospital flagpole by Mr. Abraham Janko, National Service Officer of the DAV. Mr. Janko in a short and impressive ceremony commended Dr. Verdel on the splendid work he has been doing for the disabled comrades at the hospital. Dr. Verdel, in receiving the Certificate of Merit, thanked the National Service Officer on behalf of the hospital staff commenting that the staff was largely responsible for the fine treatment accorded the patients, and that the hospital has and will continue to give the disabled veterans medical treatment second to none.

Southeastern Chapter News

Six states were represented at the organizational meeting of Area No. 3 in Atlanta, Georgia on September 2, 1950. Dr. Thomas J. D. Scanlan (APMR member) Chief of Orthopedic Service, Montgomery, Alabama; Everett M. "Pop" Sanders, CT Director of Training KMTG, Memphis, Tennessee; and Dr. William P. Kaufman, Chief Psychiatric Service, Chamblee, Georgia, presented a very informative clinical session in the morning. At the business session in the afternoon the following officers were elected:

President—Louis Hussey, Tuscaloosa, Ala.

Vice-President—Jackson B. Cobb, Columbia, S. C.

Sec'y-Treas.—Raymond B. Heaslet, Tuscaloosa, Ala.

A By-Laws Committee is to determine the need for additional officers. The duties of the various committee chairman appointed by the Association President, George Devins for this area will probably be integrated with other functions of the chapter in order to avoid duplication of effort.

Congratulations Lou! Mr. Hussey is one of the charter members of the Association and one who could always be counted upon to work towards the purposeful advancement of Association ideas. Welcome to the Southeastern Chapter, the newest chapter to our growing family of local organizations.

Registration of Corrective Therapists

The Education Committee of the American Congress of Physical Medicine held a meeting during their 28th Annual Scientific and Clinical Session, August 28, 1950 at the Hotel Statler, Boston, Massachusetts. Dr. Earl G. Elkins, retiring president of the Congress of Physical Medicine, presided over this important meeting.

The following members of the Association for Physical and Mental Rehabilitation invited to participate in this conference were: Lt. Col. Cy Morgan, U. S. Army; Mr. Leo Berner, Mr. John Baldino and Mr. Hy Wettstein, all Corrective Therapists from the New York Area; and Mr. Al Ellison, Corrective Therapist from the Boston Area.

Mr. Leo Berner, President-Elect of our Association, was invited to address the Education Committee on the subject of "Registration of Corrective Therapists." This subject was part of the agenda for the meeting. A period of discussion followed in which the physiatrists discussed the pros and cons of this important subject. Dr. Bierman of New York made a motion which was seconed by Dr. Molander of Chicago, that a committee of physiatrists be established to study Corrective Therapy and a report be made to the Chairman of the Education Committee. This motion was voted on and unanimously carried. The selection of the committee was left up to the Chairman of the meeting, Dr. Earl C. Elkins.

World Affairs and Our Members

The present world conditions have dictated the need of a larger Armed Force. Recently, many individuals have been recalled to extended active duty with the armed forces. Very possibly many of our Association members have been recalled, and others may be called into service in the near future. The editors of the Journal want to express their wholehearted wish for those who serve, a successful tour of duty. Any member who may be recalled to active duty is requested to keep in touch with the Editors, and we in turn will have the Journal of the Association of Physical and Mental Rehabilitation sent to you.

Crippled DP's to Get Aid

Efforts to help resettle physically handicapped displaced persons from Germany, Austria and Italy were begun by a committee of rehabilitation agencies. The group, the United States Committee for the Resettlement of the Physically Disabled, under the auspices of the International Society for the Welfare of Cripples, will undertake a nation-wide program to find homes for some of the estimated 1,800 cripples refugees in the camps. Dr. Henry H. Kess-

ler, medical director of the Kessler Institute for Rehabilitation and chairman of the committee, said rehabilitation services already provided to the handicapped refugees by the International Refugee Organization were of a high quality. The committee will have the support of many organizations among them the National Lutheran Council, The National Catholic Welfare Conference for New Americans and Church World Service. Four rehabilitation institutions have agreed to sponser crippled refugees for immigration and aid them in vocational training and employment.

Starts New Hobby

The man who was told he had only a year to live—in 1946—today is taking up a new hobby, and is continuing his dogged fight against muscular dystrophy which still grips the muscles of his legs, torso and arms. A former Army MP, Carl A. Arnesen who moved to Levittown, Long Island from New York City so his two children could play free from traffic, today is learning to paint china, glassware and tiles. Striken with muscular dystrophy in 1946 while he was an MP at West Point, Arnesen was at first unable to move a muscle in his body. Doctors said he would live only a year, but he decided to fight back. With the help of Gray Ladies of Nassua's Red Cross he is taking regular lessons in painting china and glassware. "I'm just learning" Arnesen said "but the main thing is to have something to do. It takes a lot of work and practice, but I have plenty of time and the Red Cross ladies have promised to keep their lessons. Nothing actually is too rough yhen you've got real friends who stand by you."

(Continued on Page 32)

GOAL DIRECTED ACTIVITIES—Cont. from Page 25

patients often become amenable to direction to a degree their disordered thinking will not permit in activities associated with more serious attitudes. In play activities, properly softened to meet his interest and emotional tolerance, the patient may discover areas which are both acceptable to him and provide fertile ground for the growth of his strivings toward socialization. As the adequacy of his personality organization grows, the patient is able to accept increased responsibility, and having attained a measure of success in the world of reality as in a more favorable position to give up his autistic behavior. Thus goal-directed activities encourage the general growth of reality-oriented, motivated activity, and are an important means of establishing communication with and promoting the recovery of the schizophrenic patient.

Book Reviews

PHYSIOLOGY OF WORK, Franklin M. Henry, University of California, Berkeley, 1950, 74 pp. $1.75.

This mimeographed pamphlet is presented as a preliminary paper on the physiology of work and exercise and is to be followed later by chapters on nerve and muscle, circulation, etc. The present text covers such subjects as the body as a machine, the chemistry of muscular contraction, the role of oxygen metabolism and the transportation of gases within the body. The high standards set in earlier works by Henry are maintained in this booklet. While the author states it has been prepared so that it can be read by those with little background in the physical sciences, the material is often quite technical. It would prove too difficult for those seeking an introduction to the subject, but is highly recommended for advanced students seeking a detailed knowledge of the body's inner workings during exercise.

P. J. R.

The Principles and Practices of Rehabilitation by Henry H. Kessler, M.D., Ph.D. in collaboration with other authors. Pp.448 with 132 illustrations. Price $9.00. Lea and Febiger, Philadelphia, Pa. 1950.

This text concerns itself with medical problems and that aspect of medical care which is the responsibility of the entire medical profession but which especially lies in the province of Physical Medicine which includes Medical Rehabilitation. In the section on general principles, separate chapters are devoted to the subjects of physical restoration, plastic surgery and prosthetic devices, physical therapy, physical reconditioning, occupational therapy, physical rehabilitation of the industrial injured, rehabilitation center, disability guidance, evaluaton, training and placement. The various chapters are written by different authors with their special interest and points of views. The material present is excellent. The second half of the book deals with special problems and their solutions: namely, rehabilitation of the amputee, psychiatric disabilities, cerebral palsey, neurologic disorders, poliomyelities, heart disease, tuberculosis, the blind and the hard of hearing. Again the different chapters are covered by different authors, each an expert in his field. This adds to the quality of the book as a reference source. However there are repetitions as several authors repeat the same general principles and to a lesser extent the same techniques. This book is an important and valuable contribution to the literature of this speciality and a book to which all the field should have access.

(Continued on Next Page)

KINESIOLOGY, Laurence E. Morehouse and John M. Cooper. The C. V. Mosby Company, St. Louis, 1950. 435 pp. $4.50.

The old style kinesiologies were largely devoted to a detailed theoretical discussion of the muscles and their action. Morehouse and Cooper have condensed their exposition of this material into a long chapter on The Structure and Movement of the Articulations and a chart of origins, insertions and actions relegated to the Appendix. Their objective has been to study the why of human structure and muscular function with the eminently practical purpose of improving performance in athletics and work. Short introductory chapters on such basic matters as mechanics, force and gravity are followed by sections dealing with posture, walking, running, jumping, falling, lifting, throwing, striking, swimming and other actions. The content proves the soundness of the authors' method, altho some of their statements are certainly open to argument. Each chapter is followed by a bibliography, usually divided into major and secondary sources.

Some may be disappointed to find that there is no extensive treatment of the kinesiology of deep knee bends, duck walks and certain other exercises which have been a source of frequent argument among trainers, especially since the publication of the article by O'Keefe and the condemnation of duck walks by the Pacific Coast Trainer's Association.

Unfortunately the illustrations are not on a par with the text. The subjects posing for the pictures on wrestling, weight lifting and fencing demonstrate only an elementary knowledge of the proper techniques. Some of the pictures of driving are blurred. In one or two instances individual pictures in a series appear to be out of order.

The text will be of great value to anyone interested in the most efficient techniques in sport or work and should find wide acceptance in college kinesiology courses. While the authors specifically disavow any intention to discuss abnormal or pathological conditions, much of their material will be found valuable to the Corrective Therapist.

P. J. R.

Appointments

The appointment of Mr. F. W. Clayton as manager of the Veterans Administration Hospital at Castle Point, N. Y., was announced by VA officials. He succeeds Mr. Noel Jeffery, who has been named manager of the VA hospital at Vancouver, Washington. The date Mr. Clayton will assume his new duties has not been announced. He is currently serving as assistant manager at the Bronx VA Hospital, where he has been assigned for the past five years.

INSTRUCTIONS IN PHYSICAL ORIENTATION—

(*Continued from Page* 12)

counterpart of those used in traveling in the opposite direction. Accompany the client along this route of travel, assisting him to carefully examine the station at which he boards the subway, noting particularly the position of the change booth, the turnstile, the transfer box—if there is one—the exit, all stairways between the platform and the street, the width of the platform, the spacing of the supporting pillars and all other features that might help the client to find his bearings if he should lose his direction while in the station or in any station simistore and any other distinctive features.

Help him to examine, in as much detail as may seem useful, the layout of the train and point out to him the points at which the train may pass under a river, make a sharp turn, be required to wait for starting signals, have doors opening on the side opposite from the one on which they more frequently open, and all other characteristics of the trip which might serve the client as cues to his whereabouts. Upon arriving at the end of the route selected, ask the client to make the return trip on his own resources, observing his performance from a distance in the manner set forth under procedures "a" and "b" of Lesson Plan No. 15.

d. Following the procedure outlined and referred to above, assist the client to acquire the information important to his safe and efficient use of elevated train transportation.

e. Direct the client to travel to a destination of his own choosing which will entail one or more modes of transportation over a route not previously traveled in the company of the instructor and provide the kind of observation of the client's conduct in traveling the route as is specified under procedures "a" and "b" of Lesson Plan No. 15.

Repeat this procedure until the client's ability to travel alone can be rated high enough in all respects to warrant the client's being discharged as fully trained in physical orientation and foot travel.

NOTE

Upon the completion of the training of a client, fill out the rating sheet provided at the end of Lesson Plan No. 6 and prepare a brief, summary report of the client's attitude to the training, his rate of progress in the various phases of the training, and his proficiency in physical orientation and foot travel at the completion of training. This report should be based on progress notes which the instructor will find it helpful to make at each session of training in order to avoid a final report based only on impressions gained during the last phase of training.

The rating sheet and report should be submitted as a part of the client's permanent record.

NEWS AND COMMENTS—

(*Continued from Page 30*)

Appointments

Dr. George F. Swanson, chief medical officer of the Veterans Administration Center in Martinsburg, West Virginia, has been named manager and chief of professional services of the VA hospital in Beckley, West Virginia.

Mr. John Bunker, Chairman of the Convention Committee, has resigned because of plans for transfer in position and Mr. Harry Hart, president of the California Chapter of our Association, was selected to head this committee.

Phychiatrists Use Radio as a Modality

The Institute of Living began broadcasting over its own radio station WIOL. The station's power is limited to the campus of the institute, which is located close to the center of Hartford, Conn. The new station is believed to be one of the first in the country operated by a psychiatric institution. The station is on the air several hours a day broadcasting news, special features and recorded music to guests at the institute. Special talks and musical programs by members of the hospital staff are planned. Sunday religious services also may be broadcasted.

Health Resources Advisory Committee

Stuart W. Symington, chairman of the National Security Resources Board announced the membership appointments of the new Health Resources Advisory Committee. The committee is headed by Dr. Howard A. Rusk and their prime function is to advise and assist the resources board on health problems relating to national mobilization. Other members of the committee are: Dr. James S. Sargent; Dr. Harold S. Diehl; Mr. David Heyman; Dr. Leo J. Schoeny; Mrs. Ruth Kuehn; Dr. William P. Shepard; and Dr. John Pastore. A large part of the committee's duties will consist of planning medical means to counteract possible attacks by atomic, biological and chemical weapons. In this it will work with the health resources office of the resources board and the Civil Defense Office. It will make policy recommendations relating to: mobilization, allocation and utilization of personnel necessary for wartime health services; environmental sanitation services; veterinary health services; utilization of health facilities; provision of health equipment and supplies; and maintenance of essential teaching and research in health fields. The health resources office with Dr. Norvin C. Kiefer as director was recently established as one of the nine major offices of the resources board and is now directly under Mr. Symington.

GI Bill Cutoff

Most veterans actually must have started their GI Bill courses by July 25, 1951, if they want to continue afterwards. A mere application for training made on or before the deadline date will not do. So ruled the Veterans Administration in a recent decision of the Administrator of Veterans Affairs, numbered 844. The VA regulation, according to the decision, is based upon the GI Bill itself, which states that a veteran's course "shall be initiated not later than four years after either the date of his discharge or the termination of the present war, whichever is later." The World War II was declared terminated on July 25, 1947 for certain purposes, including educational and training; hence the 1951 cut-off date for most veterans.

Korean Observes Rehabilitation in U. S.

Dr. Ha Ryong Park, of Seoul, Korea, has completed a week of observation of the rehabilitation techniques practiced at the Kessler Institute for Rehabilitation, West Orange, N. J. Dr. Park arrived on July 31 and left on August 6th. Dr. Park has his own hospital in Southern Korea, where rehabilitation is practiced. Previous to the Second World War, Dr. Park's hospital was located in Northern Korea but its location was changed shortly after the conclusion of World War II. Dr. Park also observed techniques and management practices at the East Orange General Hospital. Dr. Park hopes to return to his own country as soon as conditions change sufficiently to make this possible. Dr. Park left Southern Korea before the North Korea invasion began in June.

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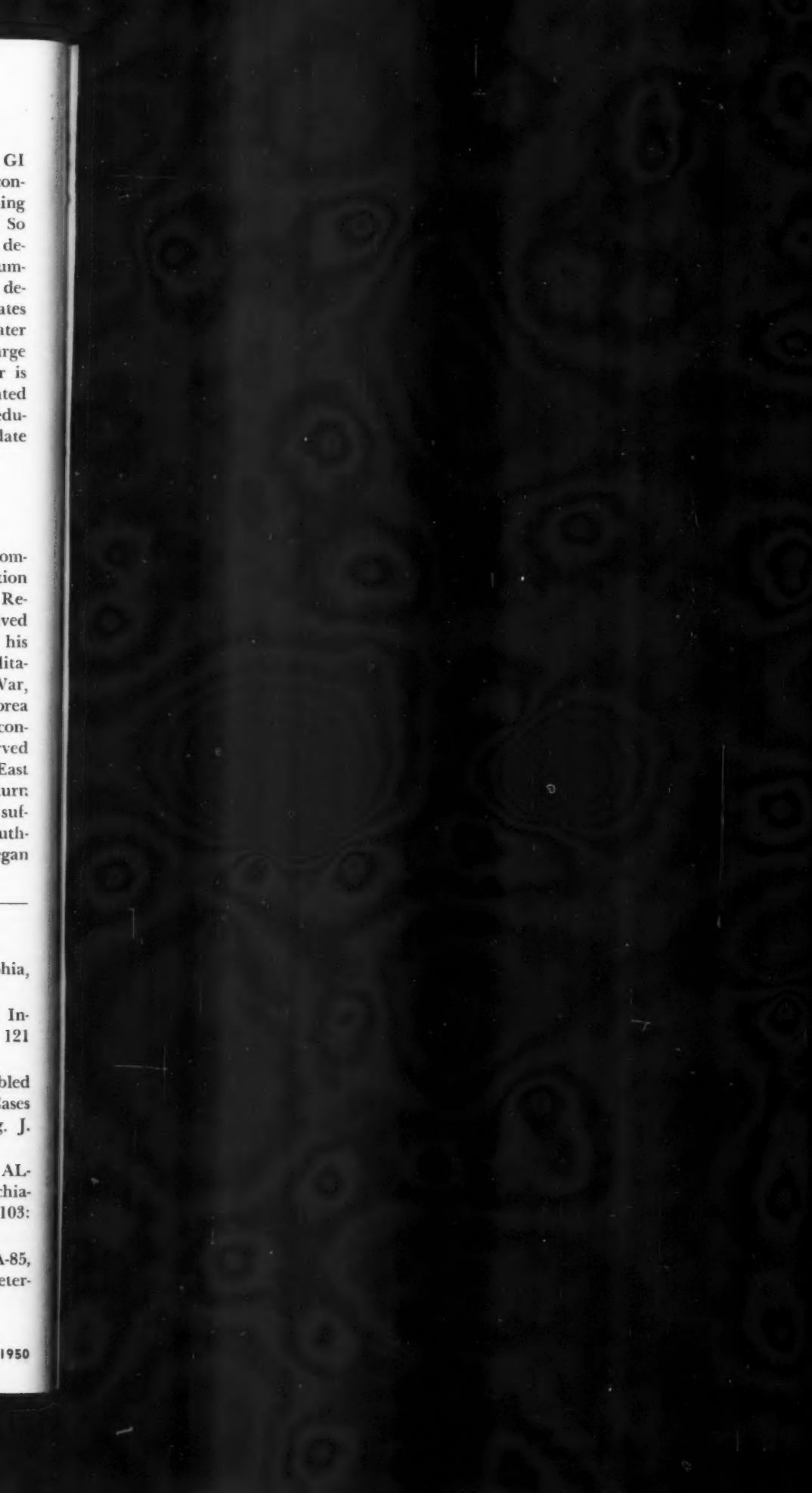
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